Original article

Perception and awareness regarding Nipah virus infection among rural people in a selected village of Bangladesh

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Abstract

Objectives : Nipah virus disease is a newly discovered disease of swine and humans associated with a new paramyxo virus given the name Nipah virus. The present study makes an attempt to assess the perception and awareness regarding Nipah virus infection among selected villages of Bangladesh.

Methods : This rural based cross sectional study was conducted among 146 villagers of Kurigram Upazilla, in Rangpur from January to June, 2011.

Results : Out of 146 respondents 75(51.4%) were female and 71(48.6%) were males and their mean age were 29.38(±7.401) years with a range of 18-25years. Among them 44 (30.1%) completed primary level of education and 56 (38.4%) were housewives. Majority 143(97.9%) were Muslim. Their mean monthly family income was Tk.4154 (±2181.5). According to the respondent's knowledge, more than fifty percent had no perception that Nipah virus infection is a communicable disease. Only 40 (27.4%) knew the cause of Nipah virus infection and 68(46.6%) had no perception about the spread of the infection and 75(53.4%) had no perception regarding treatment. Regarding knowledge of prevention of Nipah virus infection, 55 (37.7%) taken fruit (including eaten by bat) through washing, 01 (0.7%) take TT vaccination, 08 (5.5%) taken fruit (excluding eaten by bat) through washing, do not take the fruit eaten by bat, 7 (4.8%) don't take rotten food, 3 (2.1%) do not take fruit and majority 72 (49.3%) do not know. The effect of age, sex, occupation, education, monthly income on awareness, showed that education and monthly income of the respondents had significant influence on Nipah virus infection perception and knowledge.

Conclusion : Useful media to educate the rural people regarding Nipah virus infection Government and Non-Government approach is strongly suggested for providing perception and awareness to control the spread of Nipah virus infection among the rural people in Bangladesh.

Key Words : Nipah virus, Perception, Awareness.

Introduction

Nipah virus is a recently identified paramyxovirus that is closely related to Hendra virus. The first recognized outbreaks of Nipah virus illness in humans occurred in Malaysia and Singapore from September 1998 through June 1999; 283 persons, mostly pig farm and abattoir workers were infected through contact with sick pigs. A case-fatality rate of 40% was observed in Malaysia and Singapore; patients presented primarily with CNS symptoms. A second outbreak of Nipah virus infection, with a case-fatality rate of 68%, occurred from January through February 2001 in Siliguri, India, a town close to the northern border of Bangladesh. Patients affected by this outbreak presented with both encephalitis and respiratory symptoms.[1]

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Nipah virus was first recognized in a large human outbreak that affected 283 persons and caused 109 deaths in Malaysia in 1999. The outbreak was preceded by a large Nipah outbreak among pigs. Contact with sick pigs was the primary risk factor for human Nipah virus infection. The porcine outbreak, in turn, was thought to be caused by transmission of Nipah virus from fruit bats to pigs. Antibodies against Nipah virus were identified in the 2 native Pteropus species, and the virus was subsequently isolated from pooled urine samples from a P. hypomelanus colony on Tioman Island, Malaysia. The most likely initiating event was that a fruit bat that was shedding Nipah virus in its saliva dropped a piece of partially eaten fruit into a pig sty, and 1 or more of the pigs became infected.2 Genetic characterization of the Nipah virus strains isolated from pigs in the Malaysia outbreak identified 2 strains, 1 of which was identified in humans, and 1 of which may have given rise to the other through genetic drift. These findings suggest that as few as 1 or 2 instances of spillover of Nipah virus from bats to pigs occurred.[2]

Genetic data demonstrate that the isolates from Malaysia

(NiV-M) and Bangladesh (NiV-B) represent two distinct Nipah virus strains. Nipah virus outbreaks have case fatality rates of up to 100% and there are no approved vaccines or treatments and these viruses have been categorized as a biosafety level 4 (BSL4) agents. Nipah virus differs from other paramyxo viruses in its ability to infect a wide range of mammals including bats, dogs, horses, pigs, and cats. Wild life surveillance at the time of the first outbreaks, along with several subsequent studies, has identified fruit bats of the family Pteropodidae as the natural reservoir of Nipah virus.[3]

Table : 1 Socio-demographic characteristics of the respondents (n=146)

Characteristics Age Group	Frequency	Percent
18-25	50	34.2
25-30	44	30.1
31-40	42	28.8
41-50	10	6.8
Mean ±SD	29.38±7.401 years	
Sex		
Male	71	48.6
Female	75	51.4
Education		
Primary	44	30.1
Secondary	33	22.6
SSC	30	2.50
HSC	15	10.3
Bachelor	14	9.6
Illiterate	10	6.8
Occupation		
Businessman	26	17.8
Service holder	48	32.9
Day laborer	01	0.7
Farmers	07	4.8
Students	08	5.5
housewife	56	38.4
Religion		
Muslim	143	97.9
Hindu	3	2.1
Income		
5000-15000	89	61.0
16000-25000	41	28.1
26000-35000	12	8.2
36000-45000	2	1.4
46000-55000	2	1.4
Mean±SD	1.54±815	
Family Member		
2-4	90	61.6
5-7	50	34.2
8-10	4	2.7
11-15	2	1.4
Mean ±SD	4.52±1.828	

Table-2 : Distribution of the respondents regarding spread of Nipah virus infection (n=146)

Spread of Nipah virus infection	Frequency	Percent
Juice of Date	7	4.8
Date is eaten by Bat	6	4.1
Contaminate by Man	1	.7
Juice of Date, Date is eaten by Bat	44	30.1
Juice of Date, Contaminate by Man	14	9.6
Juice of Date, Date is eaten	3	2.1
by Bat, Contaminate by Man		
Jujube/Kul Boroi	3	2.1
Do not Know	68	46.6
Total	146	100.0

Table-3 : Distribution of the respondents regarding prevention of Nipah virus infection (n=146)

Prevention of Nipah virus infection	Frequency	Percent
Taken fruit (including eaten by bat) by washing	55	37.7
Take TT vaccination	01	0.7
Taken fruit (excluding eaten by bat) by washing	08	5.5
Don't take rotten food	07	4.8
Don't know	72	49.3
Don't take fruit	03	2.1
Total	146	100.0

Table 4 : Distributions of the respondents regarding treatment of Nipah virus infection. (n=146)

Treatment of Nipah virus infection	Frequency	Percent
Yes	71	46.6
No	75	53.4

Materials and Methods

This descriptive cross sectional study was conducted in the village Noahgram of Kurigram district under Rangpur division from January to June 2011. 146 respondants, 18 years and above were included in the study. Convenient sampling technique was used to select the sample for data collection. Verbal informed consent was taken from the respondents. Data were collected using a semi structured questionnaire. The analysis was carried out with the help of SPSS version 17.

Results: Out of 146 respondents, 50 (34.2%) were in the age group18-24years. The mean age of the respondents were 29.38 years (SD= ±7.401). About 75(51.4%) respondents were female and most of them were house wives 71(48.6%) were males. Most 143(97.9%) of the respondents were Muslims. Majority 89(61.0%) of the respondents monthly income were

5000-15000Tk., Majority 90(61.6%), of respondents had 2-4 family members.

Discussion

The study reveals that majority of the respondents perception regarding Nipah virus infection is poor. About 80% of the people live in rural community of village. And they are more or less vulnerable to Nipah virus infection because most of them are illiterate. They do not know the source, mode of transmission, sign symptoms and effect of Nipah virus infection.

In this study the respondents were 146, of them 50 (34.2%) were from the age group of 18-25 years and 44 (30.1%) were from the age group of 25-30years. The mean age of the respondents was 29.38 years and SD = (±) 7.401. Majority of the respondent were female (51.4%) and rest of them were male (48.6%). Female respondents were more than male respondents in the study because the males were busy in the field during the time of data collection. As per BBS, 2002[4], majority (80%) of the people of Bangladesh are Muslim. Current study also found almost the same picture.

Among 146 of the respondents 64 (43.8%) were know that Nipah virus is a communicable disease and 82 (56.2%) do not know which correlates in a Malaysian study where a limited respondents known about nipah virus diseases.6 Out of 146 respondents, regarding spread of Nipah virus infection 13(9.6%) were juice of date, date if eaten by bat and contaminate by man, 44(30.1%) by juice of date, date is eaten by bat, 14 (9.6%) juice of date contaminated by man, 3 (2.1%) juice of date, date is eaten by bat, contaminate by man, 3 (2.1%) jujube/ kul boroi and 68 (46.6%) do not know. An epidemiological investigation in Bangladesh conducted by Rahman M and Karim R7 have identified three pathways of transmission of Nipah virus infection from bats to people. The most frequently implicated route is ingestion of fresh date palm sap. In a review of the 142 Nipah case patients identified in Bangladesh from 2001 through 2011, 75 (68%) developed illness after close contact with another Nipah patient. A second route of transmission for Nipah virus infection from bats to people in Bangladesh is via domestic animals. Some people may come into direct contact with Nipah virus infection infected by bat secretions. Several Bangladeshi Nipah outbreaks resulted from person-to person transmission.

Regarding prevention of Nipah virus infection were 55 (37.7%) taken fruit by washing, 01 (0.7%) take TT vacctination,0 8 (5.5 %) taken fruit by washing, don't take the fruit eaten by bat, 7 (4.8%) don't take rotten food, 3 (2.1%) don't take fruit and 72 (49.3%) do not know about the prevention of Nipah virus infection. A study conducted in Bangladesh[7] that the prevention of Nipah virus infection is better considered in two ways – one is by limiting exposure of people to contaminated fresh date palm juice, and the other is by reducing exposure of caregivers to respiratory secretions and saliva from ill patients. For the former, it presents a dilemma - date palm sap collection provides critical income to low income collectors and is a seasonal national delicacy enjoyed by millions every year. So most effort needs to be directed at strategies to prevent the bats from gaining access to the collecting pots, and various methods are being tried, especially the use of bamboo screens or nets. For the latter, the social and cultural actions need to be addressed in a way that are consistent with the low-income setting and which help family members and other caregivers to be aware of the risks and how best to avoid or reduce them while maintaining care giving activities.

Conclusion

The study provided information about the knowledge regarding Nipah virus infection among the rural people of Bangladesh, which will help health policy makers and planners to formulate a plan and a health education program.

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